

- C3  
CMI
- 4 (2,2,3,3,4,4,4-heptafluorobutoxymethyl)-3-methyloxetane; 3-(2,2,3,3,4,4,5,5,6,6,7,7,8,8, 8-  
5 pentadecafluorooctyloxymethyl)oxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,8-trideca-fluorooctyloxymethyl)-  
6 3-methyloxetane; 3-(3,3,4,4,5,5,6, 6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyloxymethyl)-3-  
7 methyloxetane; and 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-  
8 heneicosafuorododecyloxymethyl)-3-methyloxetane.

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REMARKS

Claims 20-28 are pending in the above-referenced patent application and are currently under examination. In order to expedite prosecution, claims 20, 23, 24, 25, 26, 27 and 28 have been amended. More particularly, claim 20 has been amended to recite that the fluorinated polyurethane elastomer comprises "random" FOX/THF segments, and to clarify the definition for "R<sub>f</sub>." Support for the amendments to claim 20 can be found throughout the specification (*see, e.g.*, page 25, lines 12-16, page 28, lines 27-39, page 30, lines 6-11, page 39, lines 8-18 and lines 19-35, page 44, lines 4-12, *etc.*) and, thus, no new matter has been introduced. Claim 23 has been amended to replace the phrase "said isocyanate segment" with the phrase "the isocyanate segment," to replace the phrase "saturated MDI" with "hydrogenated MDI" as shown on page 48 of the specification, and to remove the parenthetical expression following polymeric HDI, *i.e.*, to remove N-100 and N-3200, which merely refer to examples of various polymeric HDI that can be used to form the isocyanate segment. Claim 24 has been amended to recite that the fluorinated polyurethane elastomer further comprises "a cross-link formed from a cross-linking agent or a chain-extender selected from the group consisting of low molecular weight polyols and polyamines." Claim 25 has been amended to delete reference to Isonol 93 and Jeffamines, which are merely examples of various cross-linking agents that can be used to form the cross-links. Claim 26 has been amended to correct the spelling of 1,4-butanediol, 1,3-propanediol, and benzenedimethanol so that, as amended, they are each one word and not two. Claim 27 has been amended so that it is not duplicative of claim 26. More particularly, claim 27 has been amended to recite that the chain extender is "1,4-butanediol." Finally, claim 28 has been amended to replace "3,3-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyloxymethyl)-3-methyloxetane" with "3-(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyloxymethyl)-3-methyloxetane." No new matter has been introduced by the amendments to claims to claims 20, 23, 24, 25, 26, 27 and 28.

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Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "*Version with markings to show changes made.*"

PRIORITY

In the Office Action, the Examiner has indicated that the heading "CROSS REFERENCE TO RELATED APPLICATIONS," which appears on page 2 of the specification, should be deleted (*see*, page 2 of the Office Action).

In order to expedite prosecution, Applicants have amended the specification to delete the heading "CROSS REFERENCE TO RELATED APPLICATIONS" on page 2 of the specification. In view of this amendment, the Examiner's objection is overcome.

OBJECTION TO NEW MATTER

In the Office Action, the Examiner has alleged that it is not clear that there is a basis for an amendment that was made in the Preliminary Amendment filed on March 8, 2000. More particularly, the Examiner has objected to the paragraph inserted at page 56 of the specification, stating that there does not appear to be a basis for the definitions of "X," "Y" and "Z."

In order to expedite prosecution, Applicants have amended the paragraph previously inserted at page 56, line 11. Applicants respectfully submit that support for the amended paragraph inserted at page 56, line 11 of the specification finds support in, for example, U.S. Patent Application No. 08/371,914, the teachings of which were incorporated by reference into the above-referenced patent application when it was originally filed (*see*, for instance, claim 84 of the parent application as originally filed). As such, no new matter has been introduced by this amendment.

REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH

Claims 20-28 have been rejected under 35 U.S.C. § 112, first paragraph, as allegedly containing subject matter that was not described in the specification in such a way as to reasonably convey to one of skill in the art that the inventors, at the time the application was filed, had possession of the claimed invention. Each of the Examiner's concerns and, in turn, Applicants' responses to those concerns are set forth below.

a. The Examiner has objected to the paragraph inserted at page 56 of the specification, stating that there does not appear to be a basis for the definitions of "X," "Y" and "Z."

As explained above, in order to expedite prosecution, Applicants have amended the paragraph previously inserted at page 56, line 11 to overcome the Examiner's concerns.

b. The Examiner has rejected claims 20-28, alleging that the specification is only enabled for fluorinated polyurethane elastomers having "random" FOX and THF segments.

As explained above, in order to expedite prosecution, claim 20 has been amended to recite a fluorinated polyurethane elastomer having "random" FOX/THF segments. As such, claims 20-28 are fully enabled by the specification as originally filed.

c. The Examiner has rejected claim 25, alleging that the use of the terms Isonol 93 and Jeffamines is non-enabling.

In order to expedite prosecution, claim 25 has been amended to delete reference to the terms "Isonol 93" and "Jeffamines." As set forth in the specification, the cross-linking agents used in forming the fluorinated polyurethane elastomers of the present invention are typically low molecular weight polyols or polyamines. Isonol 93, a polyether polyol, and Jeffamines, polyoxyalkyleneamines, are examples of the many cross-linking agents that fall under the scope of claim 24 and that can be used to form the fluorinated polyurethane elastomers of the present invention.

#### REJECTION UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claims 20-28 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly indefinite. Each of the Examiner's concerns and, in turn, Applicants' responses to those concerns are discussed below.

a. The Examiner has rejected claim 20, stating that the Markush group defining "R<sub>f</sub>" is confusing.

In order to expedite prosecution, claim 20 has been amended to more particularly set forth the definition of R<sub>f</sub>. As amended, the definition of R<sub>f</sub> recites:

each R<sub>f</sub> is independently selected from the group consisting of linear and branched chain perfluorinated alkyls and isoalkyls having from 1 to about 20 carbons, and oxa-perfluorinated polyethers having from about 4 to about 60 carbons.

As explained above, the definition of R<sub>f</sub> is fully supported by the specification as originally filed.

b. The Examiner has rejected claim 23, stating that there is no antecedent basis for "said isocyanate segment," and that the parenthetical expression following "polymeric HDI" and the use of the expression "saturated MDI" are unclear

In order to expedite prosecution, claim 23 has been amended to replace the phrase "said isocyanate segment" with the phrase "the isocyanate segment." Clearly, the fluorinated polyurethane elastomers recited in claims 20-28 comprise an isocyanate segment. Moreover, claim 23 has been amended to remove the parenthetical expression following polymeric HDI, *i.e.*, to remove N-100 and N-3200, which merely refer to examples of various polymeric HDI that can be used to form the isocyanate segment. In addition, as suggested by the Examiner, claim 23 has been amended to replace the phrase "saturated MDI" with "hydrogenated MDI" as shown on page 48 of the specification.

c. The Examiner has rejected claim 24, stating that the elastomer does not contain a cross-linking agent.

In order to expedite prosecution, claim 24 has been amended to recite that the fluorinated polyurethane elastomer of claim 20 further comprises "cross-links formed from a cross-linking agent or a chain-extender selected from the group consisting of low molecular weight polyols and polyamines."

d. The Examiner has rejected claim 25, stating that the use of Isonol 93 and Jeffamines renders the claims indefinite.

In order to expedite prosecution, claim 25 has been amended to delete reference to the terms "Isonol 93" and "Jeffamines." Again, as set forth in the specification, the cross-linking agents used in forming the fluorinated polyurethane elastomers of the present invention are typically low molecular weight polyols or polyamines. Isonol 93, a polyether polyol, and Jeffamines, polyoxyalkyleneamines, are examples of the many cross-linking agents that fall under the scope of claim 24 and that can be used to form the fluorinated polyurethane elastomers of the present invention.

e. The Examiner has rejected claim 28, stating that there is no antecedent basis for "said fluorinated segment."

In order to expedite prosecution, claim 28 has been amended to replace the phrase "said fluorinated segment" with the phrase "the fluorinated segment." Clearly, the fluorinated polyurethane elastomers recited in claims 20-28 comprise a fluorinated segment.

In view of the amendments to claims 20, 23, 24, 25 and 28 and the above remarks, the Examiner's concerns have been overcome. Accordingly, Applicants urge the Examiner to withdraw the rejection under 35 U.S.C. § 112, second paragraph.

#### DOUBLE PATENTING

Claims 20-28 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3 of U.S. Patent No. 5,703,194. In the Office Action the Examiner has indicated that the double patenting rejection can be overcome by the filing of a Terminal Disclaimer (*see*, page 5 of the Office Action).

Applicants respectfully request that this obviousness-double patenting rejection be held in abeyance until Applicants receive from the Examiner an indication regarding allowable subject matter. At that time, Applicants will file a Terminal Disclaimer as suggested by the Examiner.

#### OTHER OBJECTIONS

In the Office Action, the Examiner has made a number of objections to the claims in the Preliminary Amendment filed on March 8, 2000. Each of the Examiner's concerns and, in turn, Applicants responses to those concerns are set forth below.

a. The Examiner has objected to claim 27, stating that if claim 26 is found to be allowable, claim 27 will be objected to as being a substantial duplicate of claim 26.

In order to expedite prosecution, claim 27 has been amended so that it is no longer duplicative of claim 26. More particularly, claim 27 has been amended to recite that the chain extender is "1,4-butanediol." As such, the Examiner's concern is overcome.

b. The Examiner has objected to claims 26 and 27, stating that "1,3-propanediol," "1,4-butanediol" and "benzenedimethanol" should all be one word, not two.

In order to expedite prosecution, claims 26 and 27 have been amended to correct the spelling of "1,3-propanediol," "1,4-butanediol" and "benzenedimethanol." As such, the Examiner's concern is overcome.

c. The Examiner has objected to claim 28, stating that "3,3-" at the end of the line should obviously be "3-."

In order to expedite prosecution, claim 28 has been amended to set forth “3-(3,3,4,4,5,5,6,6,7,7,8,8,8-trideca-fluorooctyloxymethyl)-3-methyloxetane” As such, the Examiner’s concern is overcome.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,

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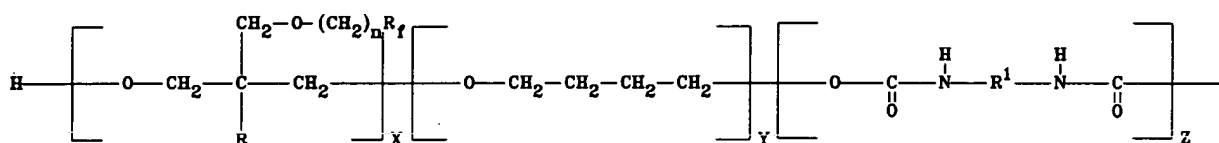
**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**In the specification**

Page 2, the heading "CROSS REFERENCE TO RELATED APPLICATIONS:" has been deleted.

Paragraph beginning at page 56, line 11, has been amended as follows:

The fluorinated thermoset polyurethane elastomers prepared from the FOX/THF coprepolymers of the present invention have the following general structure:



wherein:

$n$  is 1-3;

$\text{R}$  is selected from the group consisting of methyl and ethyl;

$\text{R}_f$  is selected from the group consisting of perfluorinated alkyls having 1-20 carbons, or an oxaperfluorinated polyether having from about 4-20 carbons;

$\text{R}^1$  is a divalent hydrocarbyl radical;

$\text{X}$  is 1-20;

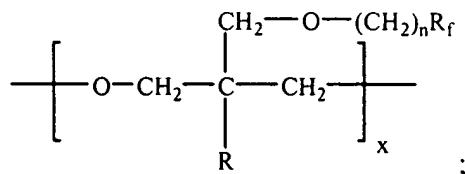
$\text{Y}$  is 10-150; and

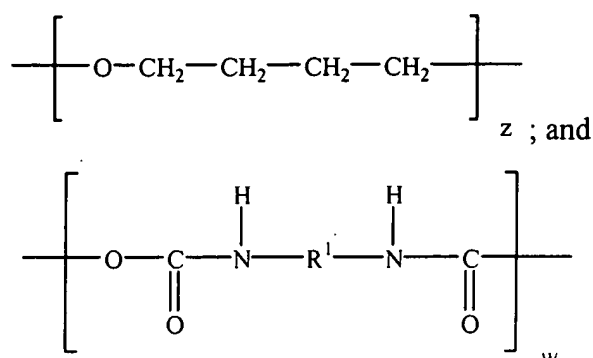
$\text{Z}$  is 2-50.

**In the claims**

Claims 20, 23, 24, 25, 26, 27 and 28 have been amended as follows:

20. (Amended) A fluorinated polyurethane elastomer having FOX/THF segments and comprising a mixture of monomeric repeat units having the general formulae:





wherein:

each  $n$  is independently selected and is a number from 1 to 3;

each  $R$  is independently selected from the group consisting of methyl and ethyl;

each  $R_f$  is independently selected from the group consisting of linear and branched perfluorinated alkyls and isoalkyls having from 1 to about 20 carbons,

[perfluorinated alkyls, linear perfluorinated isoalkyls, branched perfluorinated alkyls, branched perfluorinated isoalkyls, wherein said perfluorinated alkyls and said perfluorinated isoalkyls have from 1 to about 20 carbon atoms,] and oxa-perfluorinated polyethers having from 4 to about 60 carbons; and

$x$  is about 10 to about 250;

$z$  is 1 to about 250;

$R_1$  is a divalent hydrocarbyl radical; and

$w$  is 1 to about 50.

23. (Amended) The fluorinated polyurethane elastomer in accordance with claim 20, wherein the [said] isocyanate segment is produced from a member selected from the group consisting of hexamethylene diisocyanate (HDI), isophorone diisocyanate (IPDI), 4,4'-methylene diphenyl-isocyanate (MDI), polymeric MDI, toluene diisocyanates, hydrogenated [saturated] MDI (HMDI), polymeric HDI [(N-100 and N-3200)], trimethylhexane diisocyanate and mixtures of at least two thereof.



24. (Amended) The fluorinated polyurethane elastomer in accordance with claim 20, further comprising a cross-link formed from a cross-linking agent or a chain-extender selected from the group consisting of low molecular weight polyols and polyamines.

25. (Amended) The fluorinated polyurethane elastomer in accordance with claim 24, wherein said cross-linking agent is selected from the group consisting of trimethylolpropane, pentaerythritol, [Isonol 93,] trimethylolethane, triethanolamine[, Jeffamines], 1,4-butanediamine, xylene diamine, diethylenetriamine, methylene dianiline and diethanolamine.

26. (Amended) The fluorinated polyurethane elastomer in accordance with claim 24, wherein said chain extender is a member selected from the group consisting of 1,4-butanediol; 1,3-propanediol; and benzenedimethanol [1,4-butane diol; 1,3-propane diol; and benzene dimethanol].

27. (Amended) The fluorinated polyurethane elastomer in accordance with claim 24, wherein said chain extender is 1,4-butanediol [a member selected from the group consisting of 1,4-butane diol; 1,3-propane diol; and benzene dimethanol].

28. (Amended) The fluorinated polyurethane elastomer in accordance with claim 20, wherein the [said] fluorinated polyether segment is produced from at least one mono-substituted FOX monomer selected from the group consisting of 3-(2,2,2-trifluoroethoxymethyl)-3-methyloxetane; 3-(2,2,3,3,4,4,4-heptafluorobutoxymethyl)-3-methyloxetane; 3-(2,2,3,3,4,4,5,5,6,6,7,7,8,8, 8-pentadecafluorooctyloxymethyl)oxetane; [3,]3-(3,3,4,4,5,5,6,6,7,7,8,8,8-trideca-fluorooctyloxymethyl)-3-methyloxetane; 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,10-heptadecafluorodecyloxymethyl)-3-methyloxetane; and 3-(3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,12,12,12-heneicosafuorododecyloxymethyl)-3-methyloxetane.